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UTILITY APPLICATION FOR UNITED STATES LETTERS PATENT

PORTABLE ENCLOSING SYSTEM

by

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Enclosing System

This application claims priority to U.S. patent application 10/100,959, filed March 19, 2002, the contents of which are hereby incorporated by reference.

Field

[0001] The present invention relates generally to enclosing systems. In particular, the present invention is directed to enclosing systems that may be easily assembled.

Background

[0002] For many years people have purchased, either through a retail establishment or mail order, protective enclosing systems for their vehicles and other objects typically stored outside or for shelter. This may be because the people had no garage or because the people had more vehicles or other items to store than they had garage space, so additional protective enclosing systems were needed. This may also be because the people have boats, planes, or other powered or non-powered apparatus, machines, or other objects that need to be protected, where they need to purchase systems to protect them. Generally, these protective enclosing systems have been quite burdensome to construct due to their weight, irregularly sized pieces, difficult fastening devices, two-step processes of building a frame and then building the structure, or other aspects. Even after constructed, many of the protective enclosing systems had drawbacks, such as roofs that could not withstand heavy snow loads, weak structures that could not withstand high winds, loose fitting pieces that allowed water to enter the structure, no base to protect against ground related problems, or other deficiencies. Therefore, a need exists for a sturdy, weather tight, easy to construct, and cost effective protective enclosing system for vehicles and other objects or to provide temporary shelter from the elements.

Summary

[0003] A system and method are provided for forming an enclosure comprising a front, a rear, and sides. The system and method further provide a base on a base receiving surface and a closing portion. The front, rear, sides, base, and closing portion define an enclosed space. The system and method further provide stiffening devices extending from the sides and the closing portion, fasteners coupling the sides to the base and the sides to the closing portion via the stiffening devices, and securing devices holding edges of adjacent sections of the sides and edges of adjacent sections of the closing portion together. The system and method further provide for an access area.

[0004] Another aspect provides the access area is in the rear.

[0005] Another aspect provides additional access areas in the front and/or sides.

[0006] Another aspect provides the access area comprises first and second hinged sections.

[0007] Another aspect provides a system for forming an enclosure comprising a front, a rear, an access area, and hoop sections positioned between the front and the rear. Each hoop section comprises a first base section, a first side section coupled to the first base section, a closing portion section, a first connector section coupling the first side section to the closing portion section, a second connector section, a second side section, the second connector section coupling the closing portion section to the second side section, and a second base section coupled to the second side section.

[0008] An object of the present invention is to provide a portable enclosure comprising a separate base in contact with a base receiving surface. A first side portion is coupled to the separate base, the first side portion having vertical edges and comprising at least

one section. A second side portion is also coupled to the separate base, the second side portion having vertical edges and comprising at least one section. A front portion is coupled to the separate base, the front portion having vertical edges and comprising at least one section connected to the first and second side portions. A rear portion is coupled to the separate base, the rear portion having vertical edges and comprising at least one section connected to the first and second side portions. At least two horizontal frame members extend between the front portion and the rear portion. An arched closing portion, comprising at least one section extends between the horizontal frame members, wherein the at least one section has vertical edges. An attachment means is provided for coupling the first and second side portions to the separate base and the first and second side portions to the horizontal frame members. An attachment means is also provided for coupling the closing portion sections to the horizontal frame members. Securing devices are coupled to the vertical edges of adjacent sections of the first and second side portions and the vertical edges of adjacent sections of the closing portion together, and a first access area is provided, wherein the front portion, rear portion, first and second side portions, separate base, and closing portion are adapted to be connected to define an enclosed space.

[0009] Another object of the present invention is a method of forming a portable enclosure. A separate base is placed in contact with a base receiving surface. A first side portion is coupled to the separate base, the first side portion having vertical edges and comprising at least one section. A second side portion is coupled to the separate base, the second side portion having vertical edges and comprising at least one section. A front portion is coupled to the separate base, the front portion having vertical edges and comprising at least one section connected to the first and second side portions. A rear portion is coupled to the separate base,

the rear portion having vertical edges and comprising at least one section connected to the first and second side portions. At least two horizontal frame members are positioned to extend between the front portion and the rear portion. An arched closing portion is positioned to extend between the horizontal frame members, the closing portion comprising at least one section having vertical edges; and a first access area is provided, wherein the front portion, rear portion, first and second side portions, separate base, and closing portion are adapted to be connected to define an enclosed space.

Brief Description of the Drawings

[0010] Further features of the inventive embodiments will become apparent to those skilled in the art to which the embodiments relate from reading the specification and claims with reference to the accompanying drawings, in which:

Fig. 1 is a side view of an enclosing system with front, rear and side access areas, all shown in a closed state;

Fig. 2A is a perspective view of an enclosing system shown with two access areas in an open state;

Fig. 2B is a perspective view of an enclosing system shown with one access area in an open state;

Fig. 3 is a rear elevation view of an enclosing system;

Fig. 4 is a slightly exploded front elevation view of an enclosing system;

Fig. 5 is a plan view of a base of an enclosing system;

Fig. 6A is a perspective view of adjacent sides and adjacent closing portion sections of an enclosing system;

Fig. 6B is an end view of a connection between (1) adjacent sides and (2) adjacent closing portion sections of the system in Figure 6A;

Fig. 6C is an end view of a connection between (1) a side section and a corner section and (2) a closing portion section and a cap section of an access area in a front portion of an enclosing system;

Fig. 6D is an end view of a closing portion section and a cap section of a rear hinged section of an enclosing system;

Fig. 6E is an end view of a side section and a rear corner section of a rear hinged section of an enclosing system;

Fig. 7A is a slightly exploded side view illustrating a connection between a base, a section of a side, a connector device, and a section of a closing portion of the system;

Fig. 7B is a perspective view of two connectors coupled together via a splice device of the system;

Fig. 8 is an end view of (1) a section of a side and (2) a section of a closing portion showing a stiffening device extending from the section of the system;

Fig. 9 is a perspective view of a securing device for coupling adjacent sections of a side portion of the system;

Fig. 10 is a perspective view of a securing device for coupling adjacent sections of a closing portion of the system;

Fig. 11 is a side view of a flexible, self-securing fastener of the system;

Fig. 12 is a side view of a securing rod for a base of the system;

Fig. 13 is a perspective view of a portable enclosure according to an alternate embodiment of the present invention;

Fig. 14 is an expanded perspective view of the enclosure of Fig. 13, showing details of the first access area;

Fig. 15 is an expanded perspective view of the enclosure of Fig. 13, showing details of the second access area;

Fig. 16 is a top view of a separate base according to an alternate embodiment of the present invention;

Fig. 17 is an end profile view of a base side portion according to an alternate embodiment of the present invention;

Fig. 18A is a top view of a corner base portion according to an alternate embodiment of the present invention;

Fig. 18B is a perspective view of the corner base portion of Fig. 18A;

Fig. 19 is an end profile view of a base end portion and associated weather stripping according to an alternate embodiment of the present invention;

Fig. 20 is a perspective view of the assembly of the portable enclosure of Fig. 13;

Fig. 21A is a detailed perspective view of the assembly of a horizontal frame member and frame splice according to an alternate embodiment of the present invention;

Fig. 21B is an end view of the assembly of Fig. 21A;

Fig. 21C is a front elevational view of the assembly of Fig. 21A;

Fig. 22A is a detailed side view showing the assembly of a side section according to an alternate embodiment of the present invention;

Fig. 22B is an expanded view of the assembly of the horizontal frame member and the side section of Fig. 22A;

Fig. 22C is an expanded view of the assembly of the base side portion and the side section of Fig. 22A;

Fig. 23 is another expanded perspective view of the enclosure of Fig. 13, showing details of the first access area;

Fig. 24 is another expanded perspective view of the enclosure of Fig. 13, showing details of the second access area;

Fig. 25 is a partial perspective view of the enclosure of Fig. 13 with hinged sections removed to show a set of braces according to an embodiment of the present invention;

Fig. 26 is a side elevational view of the enclosure of Fig. 13, showing an access port and ventilation ports;

Fig. 27 is a detailed perspective view of an access cover according to an embodiment of the present invention; and

Fig. 28 is a detailed perspective view of a ventilation cover according to an embodiment of the present invention.

Detailed Description

[0011] Reference is made to Figures 1, 3, and 4, in which is shown an object enclosing system 10 according to a typical first embodiment. The system 10 comprises a closing portion 12, a first side portion 14, a rear portion 16, a second side portion 18, a front portion 20, and a base 22 (Figure 5). The system 10 also comprises an access area 24 in the rear 16 and may include a second access area 26 in the side 18. In other embodiments, the second access area 26 may be in the side 14. The second access area 26 comprises first 34 and second 36 hinged sections, where the sections 34, 36 are held closed with a closure 38 and each section 34, 36 has a handle 40. Closure 38 may be a slide lock or other suitable closing means including, but not

limited to, a deadbolt, key lock, latch, hasp, stop, and catch. A third access area 28 (Figures 2 and 4) is located in the front 20. The closing portion 12 and sides 14 and 18 of the system 10 comprise sections 30 and 32, respectively, which may be panels or the like. As can be appreciated, although only the side 18 is shown, the side 14 is similarly arranged with the sections 32, except it does not include a second access area in the embodiment shown. In other embodiments the side 14 comprises the second access area 26. Further, the second access area 26, whether located on side 18 or side 14, may be placed in alternative positions on those sides. In yet another embodiment, the system shown in Figures 1 and 4 may be comprised of only the rear 24 and front 28 access areas, the access area in either or both of the sides 14, 18, being omitted.

[0012] Figures 2A-B show another embodiment of a closing system 200 and a third embodiment of a closing system 300, respectively. All elements that are similar to the first embodiment carry the same reference numbers. In a second embodiment, the system 200 shown in Figure 2A comprises only two access areas, the access area 24 and the second access area 26, where no third access area is provided in the front 220. Likewise, a second embodiment may include a rear 24 and front 28 access areas, where no third access area is provided on either side 14 or 18. In the third embodiment, the system 300 shown in Figure 2B comprises only the access area 24, but no second access area in one of the sides 14 or 18 and no third access area in the front 320. All the embodiments show enclosing structures that may be used to enclose and protect any object. For example, the object may be a vehicle, a boat, a plane, a motorcycle, a tractor, or any other motorized or non-motorized device, apparatus, machine, or other object. In another alternative embodiment, the rear and the front may include the only access areas.

[0013] With specific reference to Figure 3, the access area 24 comprises first 42 and second 44 hinged sections. The hinged sections 42, 44 each comprise a corner section 46, 48, a cap section 50, 52, and a panel section 54, 56. The corner sections 46, 48 (Figure 6E) and the cap sections 50, 52 (Figure 6D) each have flanges 78. The hinged sections 42, 44 also comprise hinges 58 (Figures 1 and 6E) that hingedly couple the hinged sections 42, 44 to the sections 32-8 (discussed below). Further, similar to the second access area 26, the hinged sections 42, 44 comprise a locking device 64 and handles 66. The cap sections 50, 52 may comprise cutout, screened over sections 68 for ventilation.

[0014] Now with reference to Figure 4, the third access area 28 comprises hinged panel sections 70, 72, corner sections 74, 76, and a cap section 80. The corner sections 74, 76 and the cap section 80 each have flanges 78 (Figure 6C). The hinged panel sections comprise hinges 82, a locking device 84, and handles 86. The cap section 80 may comprise cutout, screened over ventilation sections 88. In some of the embodiments, one or more of the access areas 24, 26, and 28 may include cut out ventilated sections 89 (shown only in Figure 4 for convenience), sweeps 90 (only the access area 24), and flanges 91 (shown only in Figures 3 and 4 for convenience) to weather seal the access areas when the hinged sections 34, 36, 42, 44, 70, and 72 are closed.

[0015] Turning now to Figure 5, the base 22 comprises a front curvilinear section 92, a rear curvilinear section 94, and linear side sections as at 96, a base mat 98, and support plates as at 100. Alternative embodiments may not include a base mat 98, support plates, or the same number of support plates. The sections 92, 94, and 96 of the base 22 are coupled via coupling devices 102 (only one is shown for convenience). In other embodiments, the sections 92, 94, and 96 may each comprise several coupled sections, for example, the front section 92 and rear

section 94 may comprise three coupled pieces, two curvilinear and one straight. Merely as an example, four securing devices as at 104 are received in four holes of the coupling device 102 overlapping four corresponding holes in the curvilinear section 92. Likewise four securing devices 104 are received in four holes of the coupling device 102 overlapping four corresponding holes in the side section 96. The base mat 98 is received over a circular rod 106 in the sections 92, 94, and 96 and is held onto the rod (see also Figure 7A) via base clips, as at 108 (see also Figure 7A) that overlap the base mat 98. The base 22 is coupled to a base receiving surface 112 via coupling devices such as securing rods 114 (Figure 12), which may be threaded, through holes 116 periodically located along the sections 92, 94 and 96 when the base receiving surface 112 is earth, or the like. In other embodiments, the base 22 is coupled to the base receiving surface 112 via a coupling material such as an adhesive material or other adhering material if the base receiving surface 112 is asphalt (which may also be coupled via securing rods 114), concrete, or other non-earth surfaces. The base 22 further comprises recessed areas 117 in 94 to allow a vehicle tire to easily enter the system 10. The sweeps 90 may cover the recess areas in 94 for weather proofing purposes by attachment to the panel sections 54, 56, the corner sections 46, 48, or otherwise.

[0016] Returning now to Figures 1, 2A, and 2B, in combination with Figure 4, as appropriate for each embodiment, the sections 32 and the sides 14 and 18 will be described in more detail. Each section 32 includes a plurality of stiffening devices 118 (Figure 8) that extend from the section 32 of the sides 14, 18. Also, each section 30 has stiffening devices 136 (Figure 8), which are similar in shape and function as 118. Further, the hinged sections 34, 36, 42, 44, 70, and 72 have stiffening devices 119. The stiffening devices 118 may be vertical ribs and the stiffening devices as at 119 may be patterned ribs, or the like. The patterned ribs may have a

periodic or alternating raised and flat cross section, where some areas are raised and others are flat. The ventilated section 89 may be formed by cutting away material from an underside of a raised section of the patterned stiffening devices 119. The stiffening devices 118 perform several functions, such as strengthening the sections 32 and assisting in coupling the base 22, sides 14 and 18, connectors 126, and the closing portion 12 together, which will be described hereinafter. Stiffening devices 119 perform similar strengthening functions.

[0017] Several of the sections 32 are configured to perform certain, specific functions. One of the sections 32-Battery is positioned so as to be aligned with a battery of the object (not shown), if that is desired, otherwise there may be no 32-Battery. This section 32-Battery is easily opened because it is not coupled to the base 22 and closing portion 12, but only to adjacent sections 32 to allow access to the interior of the system 10 so that a battery can be interacted with, where the coupling will be described below. Another section 32-Electrical is configured to receive cords of electrical devices to permit the cords of the electrical devices to pass from an exterior to an interior of the system 10, 200, or 300. This configuration may be an opening capped with a device including a cord hole, or the like. When not in use, the section 32-Electrical electrical cord opening may be capped with a device not including a hole. As can be appreciated, the section 32-Battery and the section 32-Electrical may be in several positions within the system 10, 200, or 300, and thus none of the sections 32 is labeled as such. For example, in one embodiment of the present invention, Section 32-1 as shown in Fig. 1 may be configured as 32-Battery or 32-Electrical. Also, in various embodiments there may be more than one of the section 32-Electrical. There is also a section 32-Hinge/Electrical and a section 32-Hinge. The 32-Hinge is adjacent to one of the hinged sections 34 or 36 of the second access area 26, which allows the hinging function. Further, the 32-Hinge/Electrical includes both the

hinging function and the capped opening as described above. The 32-Hinge/Electrical is adjacent to one of the hinged sections 34, 36 of the second access area 26, to perform the hinging function. For example, in one embodiment of the present invention, sections 32-2 and/or 32-6 as shown in Fig. 1 may be configured as either 32-Hinge or 32-Hinge/Electrical. As discussed in more detail below, there are also hinged 32-8 sections that are coupled to the access area 24. In alternative embodiments, there may be no 32-Electrical, 32-Hinge/Electrical, and 32-Hinge.

[0018] Now with reference to all of the figures, as appropriate for each embodiment, a procedure for assembly will be described. As was described earlier, at least the loop of the base 22 is assembled and coupled to the base receiving surface 112. Before doing this, the base receiving surface 112 should be prepared by marking off an appropriately sized section, cleaning the base receiving surface 112 if it is not earth or the like, and if appropriate, leveling the base receiving surface 112. To determine the best placement of the access area 26, the object should be positioned on the base 22 after assembled, and any appropriate access areas marked off. Also, when this is done the optimum position for the support plates 100 can be determined and so indicated. Once the access area 26 is determined, this information is used as a guide to position the section 32-Hinge/Electrical and the section 32-Hinge because, as discussed, the section 32-Hinge/Electrical and the section 32-Hinge have hinges adjacent to the respective ones of the hinged sections 34, 36.

[0019] After performing these steps, the sections 32-1 on either side of the front 20, 220, or 320, which are where the third access area 28 may be located, are installed. To install the sections 32-1 on both the sides of the front 20, the sections 32-1 are positioned on the holding section 121 (Figure 7A) of the base 22 and flexible, self-securing fasteners 120 (Figure 11) are passed through apertures 122 in the base 22 and apertures 124 in a bottom section of the

stiffening devices 118 at an end of the sections 32-1. Although the cross section of the base 22 is shown as a k-shape, any shape may be utilized that comprises a holding section 121 and appropriately placed apertures 122 or other types of receiving areas for the fastener 120. The flexible, self-securing fasteners 120 may be tie wraps, cord, wire, string, or the like. Once these first two sections 32-1 are coupled to the base 22, the position of the access area 26 dictates where some of the sections 32 should be coupled to the base 22. The next two of the sections 32 that are coupled via fasteners 120 to the base are the sections 32-8 that are located adjacent the hinged sections 42, 44 on either side of the rear 16. These sections 32-8 have hinge elements complementary to hinge elements 58 to allow for functioning of the first 42 and second 44 hinged sections.

[0020] After performing these steps, the section 30-1 is coupled to the installed sections 32-1, while in contrast the section 30-8 is coupled to the sections 32-8 last. Two identical connectors 126, which may be T-shaped connectors, are coupled together via a splice device 128 (Figure 7B). The coupled connectors 126 are then spanned across sides 14 and 18 and positioned for connection between section 30-1 and sections 32-1 and positioned for connection to sections 32-8. After positioning the coupled connectors 126, fasteners 120 are passed through apertures 130 in the stiffening devices 118, apertures 132 in the connectors 126, and apertures 134 in the stiffening devices 136 extending from the sections 30 of the closing portion 12. After the section 30 is coupled at both ends to the section 32, a hoop portion is formed. Each of these hoop portions is defined to be a base 22/section 32/connector 126/section 30/connector 126/section 32/base 22. The structural integrity of each hoop section is independent of adjacent hoop sections, so any length of the system 10 may be possible by adding additional hoop sections.

[0021] After performing these steps, the front 20, 220, and 320 is assembled, as appropriate for each embodiment. To assemble the front 20, 220, and 320, the corner sections 74, 76 are coupled to the base 22 via fasteners 120 through apertures 138 in the corner sections 74, 76 and apertures 122 in the base 22. Then, the cap section 80 is coupled to the corner sections 74, 76 via fasteners 120 through apertures 142 in the cap section 80 and apertures 144 in the corner sections 74, 76. Following that, flange edges 78 (Figure 6C) of the corner sections 74, 76 are mated with adjacent edges 118 (B type) of the sections 32-1. Once the corner sections 74, 76 and the adjacent sections 32-1 are mated, they are secured together with a securing device 146 (Figures 6C and 9). The securing devices 146 may be elongated flexible clips that provide continuous clamping action along a continuous length of a seam to provide both securing and weather proofing functions. To further assure securing, the edges 118 (B type) may have channel sections 148 into which extensions 150 (Figures 6B-C and 9) from the securing devices 146 are received.

[0022] With reference to Figures 6C and 10, similar securing devices 152 are then utilized to secure edges 136 (B type) of the installed sections 30-1 of the closing portion 12 to a flange edge 78 of the cap section 80. Similar to above, the edges 136 (B type) of the sections 30 may have channels 148 to receive extensions 153 (Figure 6C and 10) extending from the securing device 152. A difference between securing devices 146 and 152 may be that securing devices 152 have notches 154 near their ends to allow a bending action required to conform to a curved shape of the closing portion 12, where the shape may be elliptical, semi-circular, semi-oval, crescent, or the like. Both securing devices 146 and 152 perform similar securing and weather proofing functions. The closing portion 12, corners 46, 48, 74, 76 and caps 50, 52, 80

have a curved shape to allow for increased strength against damage from heavy snow loads and to withstand high winds.

[0023] Referring now to Figures 6A-B, the sections 30, 32 have either edge A type or B type, other than where an edge A type is trimmed for coupling hinges (see Figure 6E), where adjacent sections 30, 32 have a complementary edge A or B to allow for a mechanical interconnection. This mechanical interconnection performs both securing and weather proofing functions. Further, these edges A and B may both have a channel 148 into which the extensions 150, 153 are received. Hence, after performing the above steps, a second pair of the sections 32-2 are placed next to the first pair of the sections 32-1 and coupled to the base 22 and the section 30-2 of the closing portion 12 similarly as described above. Then, the mechanically interconnected edges of the first and second pair of the adjacent sections 32-1 and 32-2 are secured together via securing devices 146, and the mechanically interconnected edges of the first and second of the adjacent sections 30-1 and 30-2 are secured together via securing device 152. Then, further sets of the sections 32 and 30 are similarly coupled to each other in the systems 10, 200, and 300, where appropriate for each embodiment, except no sections 32 are coupled adjacent to where the second access area 26 will be located in system 10 and 200. Some of these sections may be the sections 32-Electrical, 32-Hinge/Electrical, 32-Hinge, or 32-Battery, as appropriate.

After performing these steps, the base mat 98 is brought into the systems 10, 200, or 300 unrolled, and coupled to the rod 106. In other embodiments the base mat 98 may be coupled to the base 22 subsequent to assembling the base 22. Then, the support plates 100 are placed on the base mat 98. Once this is completed, the front hinged sections 70, 72 are coupled to the corner sections 74 and 76 via the hinges 82. Alternatively, in systems 200 and 300, front sections,

similar to sections 32, are mechanically mated with adjacent front sections and with the corners 74, 76 and then a securing device 146 is clamped onto the seam between either the mated front sections or the mated front sections and corners 74, 76. Then, the hinged sections 34, 36 are coupled to the hinges of the appropriate sections 32-Hinge/Electrical and 32-Hinge. Following this, the rear hinged sections 42 and 44 are coupled to the adjacent sections 32-8 via hinges 58.

[0024] One of the sections 32, the section 32-Battery, is not coupled to the base 22 nor the closing portion 12 via fasteners 120, but only coupled to adjacent ones of the sections 32 via the securing devices 146. Hence, a user need only remove the securing devices 146 and remove the section 32-Battery to gain access to a battery of an object, if appropriate. The section 32-Battery may have one or more handles to assist a user in removing it.

[0025] As can be appreciated, the number system 1-8 for the side sections 32 may be altered depending upon where the second access area 26 is positioned. Therefore, there may be no 32-2 but a 32-5, or no 32-6 but a 32-3, or other variations. Some of the system 10, 200, or 300 may be manufactured of polymers or the like, and may comprise extruded, vacuum formed, or injection molded polymer materials. Extrusion and vacuum forming allow for the unique cross-sections of the stiffening devices 118, 119, and 136. Through this unique section geometry and coupling arrangement, the systems 10, 200, and 300 are structurally sound and easy to assemble without requiring the additional step of building, or the necessity of having, a frame.

[0026] As can be appreciated, in some embodiments the access area or areas can comprise temporarily removed sections 32, where the rear also comprises rear sections, similar to sections 32, secured together as described above.

[0027] As can be appreciated, in some embodiments the sections 30 and 32 do not include any stiffening devices, only apertures or other holding devices to allow for the fasteners

or other fastening devices to secure the various parts of the object enclosing system.

Alternatively, the panels 30 and 32 may comprise other similarly functioning geometries to allow for the sections 30 and 32 without stiffening devices to be coupled to each other and to the base 22.

[0028] Yet another embodiment of the present invention is depicted in Figs. 13 to 28, and is described in detail below. In the discussion that follows, like reference numerals are used to represent elements that are similar to elements described in the previously-described embodiments.

[0029] An overall view of a portable enclosure 400 is depicted in Fig. 13. Enclosure 400 comprises a base 402, a closing portion 12, a first side portion 14, a rear portion 16, a second side portion 18, and a front portion 20. Enclosure 400 further comprises a first access area 24 at rear portion 16, and may also comprise a second access area 26 in second side portion 18. In other embodiments of the present invention, first access area 16 may be located in front portion 20. Likewise, in other embodiments of the present invention, second access area 26 may be located in first side portion 14. In still other embodiments of the present invention, both front and rear portions 16, 20 may include a first access area 16. Likewise, both first and second side portions 14, 18 may include a second access area 26.

[0030] Referring now to Figs. 13 and 14 in combination, first access area 24 comprises first and second hinged sections 42, 44 respectively. Hinged sections 42, 44 may be locked with a conventional closure 38 (not shown) including, without limitation, a slide lock deadbolt, key lock, latch, hasp, stop, and catch. At least one of hinged sections 42, 44 may include a grasping device such as a handle 40 to facilitate opening and closing of the hinged sections.

[0031] With reference now to Figs. 13 and 15 in combination, second access area 26 comprises first and second hinged sections 34, 36 respectively. Hinged sections 34, 36 may be held in a closed position with a closure 38. At least one of hinged sections 34, 36 may include a handle 40 to facilitate opening and closing of the hinged sections.

[0032] As shown in Figs. 13-15, closing portion 12 and sides 14 and 18 of portable enclosure 400 comprise sections 30 and 32, respectively, which may be pre-formed panels or the like. As can be appreciated, although only second side 18 is shown, first side 14 is similarly arranged with sections 32, except it does not include a second access area 26 in the embodiment shown. In other embodiments side 14 comprises second access area 26. Further, second access area 26, whether located on side 18 or side 14, may be placed in alternative positions on those sides. In yet another embodiment, portable enclosure 400 as shown in Figs. 13 and 14 may be comprised of only rear portion 24 access area, the access area in either or both of sides 14, 18, being omitted.

[0033] Portable enclosure 400 is assembled upon a separate base 402, shown in Fig. 16. Base 402 comprises base side portions 404, base corner portions 406, and base end portions 408. Base side portions 404, shown in detail in Fig. 17, have a supporting projection 410 and an attachment portion such as an opening 412. A pair of flanges 413 of base side portion 404 serve to at least partially surround an attachment means 420 (discussed below) which extends through opening 412. Supporting projection 410 and opening 412 are used to support and attach side portions 32 to base 402, discussed in greater detail below. Details of base corner portion 406 are shown in Figs. 18A and 18B. Base corner portion 406 comprises a base attachment opening 405 adapted to couple with securing rods 114 (see Fig. 12) for mounting base 402 to receiving surface 112. An end portion opening 407 is adapted to couple with frame end member 424, as

discussed in detail below. A pair of formed openings 444 captively retain a weather stripping 442 (not shown) as discussed in further detail below. Base end portions 408, shown in detail in Fig. 19, are low in profile so as to permit a vehicle to drive over the base end portions without damage to the vehicle or to the base end portions. Base 402 is assembled by coupling base side portions 404 and base end portions 408 to base corner portions 406, as shown in Fig. 16. Base side portions 404 and base end portions 408 are coupled to base corner portions 406 by base splices 414 and secured together using any conventional attachment means 420 (not shown) including, without limitation, threaded screws, self-tapping screws, fasteners, bolts and nuts, self-locking ties, clips, clamps, hook-and-loop material, tape, and structural adhesives. Base side portions 404 and base end portions 408 may each comprise a single section, or may comprise a plurality of sections joined by one or more base splices 414. In the embodiment depicted in Fig. 16, each base end portion 408 comprises a single section, while each base side portion is constructed from three sections 416 coupled together by two base splices 414. Attachment means 420 (not shown) may be used to secure sections 416 to splices 414. After assembly, separate base portion 402 is secured to a base receiving surface 112 (not shown), such as a driveway or lawn, using securing rods 114 (see Fig. 12) or an adhesive, as previously discussed.

[0034] After base portion 402 is secured to a receiving surface, portable enclosure 400 may be assembled as generally shown in Fig. 20. A pair of frame end members 424 are attached to base corner portions 406 at front and rear portions 16,20 by any conventional attachment means 420. Frame end members 424 are preferably of unitary construction, although the frame end members may alternatively be assembled from separate components such as a pair of vertical frame members (not shown) and an arch member (not shown). Terminating ends 425 of frame end members 424 are fitted into end portion opening 407 of base corner portion 406

(see Figs. 18A and 18B). In an embodiment of the present invention, end portion opening 407 may be deleted and terminating ends 425 may rest atop base corner portion 406.

[0035] Side sections 32 and closing portion sections 30 are then attached as shown in Fig. 20, beginning at frame end members 424. A lower edge of the side sections 32 adjacent to frame end members 424 are coupled to base side portions 404 using attachment means 420. Lateral edges of the side sections 32 adjacent to frame end members 424 are also coupled to the frame end members using attachment means 420. Lastly, upper edges of side sections 32 are coupled to closing portion sections 30 via horizontal frame members 426 positioned between first and second frame end members 424, the horizontal frame members acting as a connector or splice. Attachment means 420 may be used to couple the side sections 32 and closing portion sections 30 to horizontal frame members 426. Horizontal frame member 426 are preferably not attached to frame end members 424, but may be attached or rest against the frame members in alternate embodiments. Horizontal frame members 426 may optionally comprise at least two horizontal frame sections 428 joined together by frame splices 430. An expanded view of frame sections 428 and frame splice 430 according to an embodiment of the present invention are shown in Figs. 21A-21C. In the embodiment shown in Figs. 21A-21C, attachment means 420, such as self-tapping screws, are placed into openings 431 of frame splice 430 and screwed into frame section 428.

[0036] With reference again to Fig. 20, after assembly and attachment of the side sections 32 adjacent to frame end members is complete, additional side sections 32 and closing portion sections 32 may be assembled to portable enclosure 400. Side sections 32 extend between base side portion 404 and horizontal frame members 426, and are attached to the base side portion and horizontal frame member by any conventional attachment means 420, as shown

in Figs. 20A-20C. Adjacent side sections 32 are coupled together with securing devices 146 (see Figs. 6A-6E and 9) as previously detailed for other embodiments of the present invention.

[0037] With continuing reference to Fig. 20, closing portion sections 30 are likewise assembled to portable enclosure 400, extending between opposing horizontal frame members 426. Closing portion sections 30 are coupled to horizontal frame members 426 by attachment means 420 (not shown). Edges 118/136 of closing portion sections 30 may be coupled together with securing devices 152 (see Figs. 6A-6E and 10) as previously detailed for other embodiments of the present invention.

[0038] Referring now to Fig. 23, first access area 24 may be selectively closed by first and second hinged end sections 42, 44. In one embodiment of the present invention, hinged end sections 42, 44 are generally planar and are adapted to close off first access area 24 generally flush with frame end member 424. First and second hinged end sections 42, 44 may be hingedly attached to frame end member 424 by any conventional hinging means 432 including, without limitation, butt hinges, continuous hinges, slip hinges and flag hinges and using any number of hinges, as necessary. Adjacent edges 43, 45 of hinged sections 42, 44 respectively may be designed to overlap if desired, to form a weather seal.

[0039] Second access area 26 may likewise be selectively closed by first and second hinged side sections 34, 36, as shown in Fig. 24. In an embodiment of the present invention hinged end sections 34, 36 are generally planar and are adapted to close off second access area 26 generally flush with adjacent side sections 32. First and second hinged side sections 34, 36 may be hingedly attached to adjacent side sections 32 by any conventional means, such as hinging means 432. Adjacent edges 35, 37 of hinged side sections 34, 36 respectively may be designed to overlap if desired, to form a weather-tight seal. In an embodiment of the present

invention, a pair of vertical support members 434 may be used to provide structural support for hinged side sections 34, 36. Vertical support members 434 extend from base side portion 404 to horizontal frame member 426, and are attached to the base side portion and horizontal frame member as well as an adjacent side section 32 by any conventional attachment means 420 (not shown).

[0040] With continuing reference to Fig. 20 in combination with Fig. 13, one skilled in the art will recognize that second access area 26 may be located anywhere along second side portion 18 by arranging the desired number of side sections 32 on either side of first and second hinged sections 34, 36. In an embodiment of the present invention, hinged sections 34, 36 are located such that the driver's door of a vehicle (not shown) is generally adjacent to second access area 26 when parked within enclosure 400. Likewise, if a second access area 26 is installed at first side portion 14, hinged sections 34, 36 are preferably located generally adjacent to a passenger door of the parked vehicle.

[0041] In an embodiment of the present invention, portable enclosure 400 may further comprise support braces 436, as shown in Fig. 25. Braces 436 extend from first side portion 14 to closing portion 12, and may be attached to at least one of horizontal frame member 426, closing portion 12 and first side portion 14. Braces 436 may likewise extend from second side portion 18 to closing portion 12, and may be attached to at least one of horizontal frame member 426, closing portion 12 and second side portion 18. Braces 436 serve to add structural rigidity to portable enclosure 400, reducing lateral movement or "racking" of the enclosure and increasing the weight-loading capability of closing portion 12, such as supporting ice and snow loads.

[0042] In an alternate embodiment of the present invention, portable enclosure 400 may further comprise tire supports 438, as depicted in Fig. 16. Tire supports 438 serve to elevate the tires of a vehicle (not shown) while stored within enclosure 400, minimizing ruts in receiving surface 112 (not shown) and reducing degradation of the vehicle's tires due to regular contact with the receiving surface, particularly when the receiving surface is a lawn or other earthen surface. Tire supports 438 may be made of any conventional material, such as wood, metal, plastic and composites.

[0043] With continued reference to Fig. 16, portable enclosure 400 may further comprise a mat 440 extending between base side portions 404 and base end portions 408 to provide a protective floor surface. Mat 440 may be attached to base side portions 404 and base end portions 408 using any conventional attachment means 420 (not shown). Mat 440 may be made of any conventional material, such as plastic, synthetic rubber, wood and cloth tarpaulin sheeting.

[0044] Another optional embodiment of the present invention may comprise weather stripping 442 (see Figs. 23 and 24) extending around at least part of at least one of first access area 24, second access area 26 and third access area 28. Weather stripping 442 may be any shape desired to effect a weather-tight seal, and may be secured by attachment means 420, such as adhesives, or may be adapted to be captively fit into formed openings 444, as shown in Fig. 19.

[0045] Yet another optional embodiment of enclosure 400 comprises at least one access port 446 in a side section 32, as shown in Fig. 26. Access port 446 may comprise an access cover 448, as shown in detail in Fig. 27. Access cover 448 substantially closes off access port 446 while allowing a power cable (not shown) to pass through the access cover via an

opening 450 and into the interior of enclosure 400. Access cover 448 may be secured to enclosure 400 by press-fitting the access cover into an appropriately-size opening (not shown) of access port 446. Access cover 448 may also be secured by any conventional attachment means 420. In an embodiment of the present invention, access cover 448 may be adapted to be selectively engaged to side section 32 such that it may be removed and replaced with a plug, cap or other covering means (not shown) to provide an environmental seal for portable enclosure 400 when access port 446 is not needed. The seal cover may be similar in shape to access cover 448 (see Fig. 27), but lacking any openings such as opening 450. It should be noted that any number of access ports 446 may be installed. Further, access ports 446 may be placed at any convenient location on first and second side portions 14, 18.

[0046] Still another embodiment of enclosure 400 comprises at least one ventilation port 452 located in a side section 32, shown in Fig. 26. Ventilation port 452 may be effectively closed by a ventilation cover 454, shown in Fig. 28. Ventilation cover 454 substantially closes off ventilation port 452 to bugs and debris, while allowing air and exhaust fumes to pass through ventilation openings 456. Ventilation cover 454 may be secured to enclosure 400 by pressing the ventilation cover into an opening at 452, then bending at least one tab 458 outwardly against the side section 32. Alternate embodiments of ventilation cover 454 may be secured by press-fit or attachment means 420. It should be noted that any number of ventilation ports 452 may be installed. Further, ventilation ports 452 may be placed at any convenient location on first and second side portions 14, 18.

[0047] A first access area 24 may be located at rear portion 16. Likewise, a third access area 28, identical in structure to first access area 24, may be located at front portion 20. A second access area 26 may be located at second side portion 18. Likewise, a fourth access area

409 (not shown), identical in structure to second access area 26, may be located at first side portion 14. One skilled in the art will recognize that alternate embodiments of the present invention may comprise any partial or whole combination of first, second, third, and fourth access areas.

[0048] One skilled in the art will further recognize that the order of assembly of the components that comprise portable enclosure 400 may be changed from the order previously discussed without departing from the scope of the claims of the invention. One skilled in the art will also recognize that the length of portable enclosure 400 may be increased or decreased as desired by altering the length of base side sections 416 and horizontal frame sections 428 or adding and removing base side sections and frame sections. Then, side sections 32 and closing portion sections 30 maybe added or removed as needed.

[0049] While this invention has been shown and described with respect to detailed embodiments thereof, it will be understood by those skilled in the art that various changes in form and detail thereof may be made without departing from the scope of the claims of the invention.